

DOCUMENT RESUME

ED 189 077

SP 016 286

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TITLE What the Teacher Effectiveness Research Has to Say About Teaching Practices and Student Performance. R&D Rep. No. 5069.
INSTITUTION Southwest Educational Development Lab., Austin, Tex.: Texas Univ., Austin. Research and Development Center for Teacher Education.
SPONS AGENCY National Inst. of Education (DHEW), Washington, D.C.
PUB DATE [79]
NOTE 91p.
DESCRIPTORS MF01/PC04 Plus Postage.
*Academic Achievement: Classroom Environment: Correlation: Educational Status Comparison: Elementary Secondary Education: *Input Output Analysis: *Predictor Variables: Student Behavior: *Teacher Behavior: *Teacher Effectiveness: *Teacher Influence

ABSTRACT

This research report examines various teacher and student behaviors and their effects on academic achievement. Pupil achievement levels were assessed before and after observing and recording teacher and student behaviors occurring in the classroom. Correlational data was collected from these classroom observations and program evaluations. The first half of the report detailed research limitations, cognitive and affective aspects of learning, socioeconomic status as a predictor of achievement, teacher functions, and a conceptual model for examining pupil experience. The second half interpreted the research results. Factors having a positive correlation to student achievement were time, student participation and cooperation, direct teaching methods, praise, teacher use of evaluative feedback, establishment and implementation of reasonable conduct rules, clarity, and small group instruction. Among the negative achievement factors were indirect teaching methods, belittlement of pupils, peer pressure control, and unsupervised individual and small group work. Final conclusions, references, and tables follow the report. (CJ)

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ED189077

What the Teacher Effectiveness Research
Has to Say About Teaching Practices and Student Performance

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This study was supported in part by Contracts and Grants from the National Institute of Education to The Research and Development Center for Teacher Education, The University of Texas at Austin, and to the Southwest Educational Development Laboratory, Austin, Texas. The opinions expressed herein do not necessarily reflect the position or policy of the National Institute of Education and no official endorsement by that office should be inferred.

¹In Part I and Appendix A to this paper we have presented a pupil-centered model for research on teaching effectiveness. This model utilizes the natural setting of the classroom and incorporates current educational practices.

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Part I. A Conceptual Framework for Reviewing and Conducting Teacher
Effectiveness Research

If some ancient and enterprising Greek had thought to ask the Oracle of Delphi "What are the characteristics, attitudes, beliefs, competencies, skills and above all, behaviors, of an effective teacher?" the history and the state of research on the question of effective teaching would surely be far different than it is. If, as we suspect, there was less than divine wisdom operating and the oracle had responded with a definitive description of such a universally effective teacher model, we should surely have recognized it for the myth that it is a long time ago. Most certainly, we would have recognized the mythological and monolithic nature of an ideal model as our public education system expanded to include a broader range of age groups sorted into grades and levels, and broadened into a multiplicity of subject matter, curricula and tracks. If educational researchers had been confronted with such a myth, not of their own making, then surely they, like researchers in other areas, would have been profitably engaged from the very beginning in de-mythologizing the demigod of the model teacher to uncover the truths caught up in that myth.

But the question was never posed to an ancient oracle, and the course of research devoted to the questions of effective teachers and effective teaching has been as arduous and tortuous as any Greek hero's search for his prize. The idea, or in truth, the vision of a "model," "ideal," or "effective" teacher, apart from theories of teaching and methodologies, seems to have sprung full grown from the research community itself. And, like the face of Helen that launched a thousand ships, the vision of the ideal teacher launched a thousand or more research studies questing for those characteristics (called presage variables by researchers) that would personify that monolithic model. The search was underway to identify any characteristic--sex, age, ethnicity, personality, education, experience, socio-economic status, commitment to teaching--anything that would prove to be a universal predictor of pupil achievement and a characteristic generic to effective teachers. But today we can examine the reported research and comprehensive reviews of that research (Barr, 1948; Ryans, 1960; Getzels and Jackson, in Gage, 1963; Rosenshine and Furst, 1973; Dunkin and Biddle, 1974; Medley, 1977) and still find unanswered the question posed by R. E. Gotham in 1945 (Barr, 1945):

What measurable relationship exists between a teacher's personality as appraised through the use of certain rating scales and as measured by certain tests of personality, and her ability to produce measurable change in her pupils? (p. 157)

What this body of past research tells us is that, taken singularly, none of these presage variables consistently predicts a positive gain or change in pupils. It does not tell us how teacher characteristics translate into identifiable classroom behaviors that could produce changes in pupils or how these characteristics could be used to inform the process of teacher training. Because of these and other problems in applying this model, it is hardly surprising that educators and researchers have changed the focus of the search from teacher characteristics to teacher behaviors.

The question for study has now become "What measurable relationship exists between a selected teacher behavior as appraised through the use of rating scales and/or as measured by observation instruments, and significant gains from pre-test to post-test in pupils' performances?"

For the past 15 years or so, research in the area of teacher and teaching effectiveness has been characterized by the shift in focus we have just described, and by increased funding. A great deal of the funding has come from the Federal government to support individual investigators and institutions established by the Federal government for the express purpose of advancing research. This has made it possible to do larger studies with full-time investigators and has made both expertise and technological equipment more accessible.

It does not seem unreasonable to expect this combination of expertise and expenditures to materialize into a sound foundation of research information that will be useful in informing

policy makers, teacher education program developers, or competency-based performance standards for teachers and pupils. But to put it bluntly, that broad and that applicable, and that sound a research foundation has not yet been achieved. There is credible information related to very specific areas of research; there are several strong trends derived from cumulative research findings; and there are a number of studies that offer some supportive findings for theory-based hypotheses. With careful attendance to limitations, all of this information can be helpful to those responsible for policies, practices, and programs in public education. It is the intent of this paper to provide that information, together with those interpretations and explanations that can legitimately be derived from the current research reported in the literature.

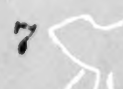
Limitations of the Research

One of the most pervasive limitations of the research in this area is that which applies directly to the breadth of the information base and, therefore, to the applicability of the research-based information--namely, that the bulk of the research is concentrated at the primary and elementary levels, and is noticeably lacking at the junior high and secondary levels. Within these levels, there is again a concentration on two subject-matter contexts, reading and mathematics, and almost total reliance on standardized achievement tests in these two subjects as criterion measures. But while these limitations are, of course, restrictive, they could also be considered a reflection of the responsiveness of the research community to the present concerns

of today's educators who are intent upon improving the basic skills acquisition of all pupils.

Another limitation that must be considered relates to the "soundness" of the studies that comprise the foundation of research-based information. There are a great number of studies done each year that appear in journals or as unpublished dissertations and although many of them make for interesting and provocative reading, they cannot meet the necessary criteria of generalizability or reliability that must be applied in creating an information base. This simply means that some studies are done in circumstances that make their findings specific to that one research population; some use instruments of questionable reliability or validity; and, more often, studies are reported without adequate descriptive or definitive information with regard to research populations, procedures, methodologies, and the variables under study. In a recent review of current research literature in the area of teacher effectiveness covering 289 studies (Medley, 1977), only 14 survived the application of four criteria that the author considered essential to the formation of a sound research base.

The final, and probably most important, limitation of the present research has to do with qualifications that must be placed on even that which is considered to be "sound" research. The purpose of the majority of the current studies is to identify relationships between teacher behavior and pupil outcome which take the form of process-product studies, reporting their findings as process-product correlations. Correlational studies do not establish cause and effect



relationships. Even if the same relationship between a process and product variable is reported under different circumstances, we will have advanced our knowledge of circumstances, but not proof of a cause and effect relationship between the process and product variables. Since effective teaching implies causation, it is important to note that such behaviors "must ultimately be derived from experimental rather than correlational studies, so that causation can be inferred" (Borich, 1977, p. 11).

It is from this "predictive" element of correlational research studies that useful interpretations are inferred, and it is the responsibility of the interpreter not to extend interpretations and applications beyond the circumstances of the cited study without at least calling attention to that departure.

These limitations and qualifications will explain why there are few, if any, oracular pronouncements provided in this paper. An awareness of these limitations may also serve to increase a reader's tolerance for the constantly hedging language of "appears," "seems to indicate," and "suggests" that can be highly irritating after a very short time. This language will be most noticeably present when we are considering the research on the relationship between teacher behaviors and pupils' self-concepts. Although the scope of the reported research is not as limited by grade level or subject context, it is considerably more limited by the inconsistencies of defined or described dimensions of the studied variables and the validity and reliability of the instruments employed. However, we can state, without qualification, that slow and cautious though the progress may be in identifying

relationships between teaching behaviors and pupil outcomes measured by changes or gains in academic performance (cognitive criteria), it is at full gallop when compared to the progress so far attained in the search for relationships between teacher behaviors and pupil outcomes measured by gains or changes in self-referenced dimensions (affective criteria).

There is a substantial amount of information to be considered even in the light of all the foregoing imposed limitations. In only 14 studies, meeting all of his applied criteria, Medley (1977) still found over 600 important relationships between teacher behaviors and pupil outcomes. Fortunately, a great number of these relationships appear across studies and can be considered together.

Cognitive and Affective Aspects of the Learning Experience

Every pupil has experienced first-hand both the affective aspects of cognitive activities (e.g., being asked, from the beginning of his/her schooling experience, "How do you like school?"); and every pupil has experienced cognitive aspects of affective activities (e.g., being similarly asked, "And how are you doing in school?"). Educators have philosophically recognized the unity of cognition and affect in the classroom experience; but in classroom practice, as in research, there is often an imposed dichotomy of the two.

What to teach and how to teach it best are cognitive objectives; but learning the objectives, in the way that they are taught, is an experience that includes not only cognitive but affective components.

By far the majority of the research has addressed the cognitive side of the equation, because education has been interpreted as primarily a cognitive experience and the purpose of research is to improve the cognitive products. Relatively little attention has been paid to complementary improvements in the affective products of education.

The inadequacy of such a dualistic approach to the experience of schooling is caught in the following quotation from Piaget:

There is a constant parallel between the affective and intellectual life throughout childhood and adolescence. This statement will seem surprising only if one attempts to dichotomize the life of the mind into emotions and thoughts. But nothing could be more false or more superficial....

Of course affectivity is always the incentive for actions... since affectivity assigns value to activities and distributes energy to them. But affectivity is nothing without intelligence. Intelligence furnishes affectivity with its means and clarifies its ends....

Intelligence thus neither begins with knowledge of the self nor of things as such but with knowledge of their interaction, and it is by orienting itself thus simultaneously toward the two poles of that interaction that intelligence organizes the world by organizing itself. (quoted in Rubin, 1973, p. 142.)

The question for educational policy makers is, accordingly, "How can a public education program be simultaneously oriented toward these two poles in order to produce knowledgeable students?" We have always expected our programs and policies to produce students with certifiable levels of academic achievement. We have always expected the experience of schooling to produce students with respect for learning, respect for authority, respect and value for property, and a value for honesty. "Good" schools are those that have records of consistently high academic achievement and consistently low records of pupil disciplinary problems. "Poor" schools are those that reverse the highs and lows of these two categories. Both of these categories, learning and discipline, are solid representations of very real pupil behaviors. They do not represent the dichotomy of cognitive and affective aspects of education, but the very real parallel of the intellectual and the affective as it is experienced in the lives of students. They have good schooling experiences and poor schooling experiences; they get good educations and poor educations.

The paralleling of the cognitive and affective should occur in the schooling experience, but this is where the dichotomy is most often imposed. It is imposed by those educators who think of education only in terms of "trade-offs" between cognitive and affective outcomes. It is also imposed by those educators who think of cognitive objectives as unnatural intrusions in the idyll of childhood. To maintain simultaneous orientations is not to polarize on the parallels, but to utilize them for the process of creating good educational experiences.

In the face of declining scores on reading and mathematics tests as a nationwide phenomenon, many educators and policy-makers have called for an immediate "back to basics" move, a credible but only partial solution to the problems revealed in those scores and in other surveys of literacy and delinquency. It is not difficult to say: "Prior to promotion from one grade level to the next, all students must demonstrate grade level proficiency in the content areas of reading, mathematics, and language skills in accordance with the standards established by the _____ Tests of Academic Achievement." The difficult task will be, as it has always been, to make the values, beliefs, and goals expressed for pupils by society the operating values, beliefs, and goals of all pupils in the system.

Socioeconomic Status (SES) as a Predictor of Pupil Experience

At present, the best predictors of pupil academic achievement are pupil IQ and pupil SES. Pupil IQ represents the cognitive, and indicates the potential for achieving academic objectives. Pupil SES is comprised of a plexus of environmental and experiential factors (including values, beliefs, and goals) that represents the affective.

Pupil SES predicts not only academic success or failure, it predicts life expectancy, mental and physical health, juvenile delinquency and adult criminality, property ownership, and employment. It is a fact of our national life that low SES as a category subsumes, with but few exceptions, all of our cultural and racial minorities. The word "pupil" has no influence over the designation of SES, and if SES

is a predictor for the nature of peoples' life experiences, it hardly seems reasonable to exempt SES as a predictor of the nature of the schooling experience, while using it as a predictor of the outcomes.

It is pupil SES that largely accounts for a pupil's match or mismatch with the institutionalized language, culture, values, behavioral schema, and concept formations found in our public school systems. Our public schools are all representative of middle-class America, whether they are located in rural or urban, high or middle or low economic areas (Yee, 1969). The high, middle, or low SES designations for schools used in educational research refer to characteristics of the pupil populations and not to the values, beliefs, or goals that will be encountered by the pupil during the schooling experience.

Eradicating SES as a Predictor of Achievement

In a recent article the Director of the National Institute of Education stated:

... in arguing that it is unreasonable to expect education by itself to equalize income and eliminate social class, I am not taking the position that education should endorse the status quo. To the contrary, one of the major goals of the NIE is to promote equality of educational opportunity. We limit our charge, however, to reducing the predictive value of race, sex, and class on academic performance. (Graham, 1979, p. 26)

Certainly the eradication of these variables as predictors of performance is an admirable goal. The problem, however, is that SES predicts not only achievement but also the nature of the experiences which pupils will have in the classroom. Pupils from middle and high SES backgrounds will have values and learned behaviors largely congruent with the values and expected behaviors of those classrooms. Pupils from low SES backgrounds will have values and learned behaviors largely at odds with the classroom milieu. When SES is used in research as a global pupil characteristic, it does not differentiate between those pupils whose cognitive abilities are inadequate to the learning tasks (IQ) and those pupils of adequate ability whose values and attitudes render the learning tasks themselves irrelevant.

Researchers, then, have used SES as a global characteristic subsuming both cognitive and affective aspects of the educational process. Do teachers, who are in charge of pupil experiences, use criteria that go within and beyond pupil SES to make their predictions of pupils' academic successes or failures? Willis (1972) identified four criteria that teachers use in predicting achievement.

According to Willis, the four criteria most highly correlated with accurate teacher estimates of pupil performances were (1) "attention to the teacher," (2) "level of maturity as assessed by the teacher," (3) "self-confidence," and (4) "ability to work without supervision." These were described as initial assessment criteria, that is, criteria used before teachers had access to pupil information and before they had spent much time observing and interacting with pupils in the classroom.

The first criterion, attending to the teacher, is a pupil response that would demonstrate, if not an interest in the subject, at least a value for the teacher's authority and proper performance of the pupil role, in other words, obedience. The second criterion is one again of appropriate social behavior within the classroom context. It is "immature" to fight, grab things away, destroy or misuse property, talk out or use an "outdoor" voice, and so on. To be self-confident, the third criterion, is to be able to handle the exigencies of being a pupil without having to rely on other pupils or the teacher; and the fourth criterion, the ability to work without supervision, has within it the ability to follow directions, to apply learned skills, and not become a disruptive nuisance. In other words, the pupil who rated high on all four of these criteria would have a pretty good grip on the pupil role, a reasonable understanding of the pupil's place and purpose in the classroom, and an interest in what was going on. It is clear then that teachers use a model of pupil behavior defined largely in middle class terms to predict pupil achievement in their classrooms.

These are simply not the behaviors of low SES pupils as they are reported in the research literature. For example, Rist (Note 1), who did what would now be described as a study of a classroom "ecosystem," observed a black kindergarden teacher and her 30 black pupils over an extended period of time. He found that pupils who were from families with higher income levels, higher education, better dressed,

and speaking in what was described as "Standard American English," were placed at the table nearest the teacher and assessed by the teacher as having more "ability" to learn. Pupils at the other two tables who spoke in a dialect were described as "not having any idea what was going on in the classroom." The teacher presented the lessons directly to Table I, interacted with them far more frequently, and gave them more praise and privileges. According to Rist, these pupils were sent on to the first grade and were continued in these "ability" groupings in spite of the fact that some pupils from Tables II and III scored higher on an IQ test given at the end of the year than some of the pupils at Table I.

In a more recent study, Copeland (Note 2) offers this description of two classrooms and the pupil behavior observed:

Classroom A, a fourth grade class, was located in a racially and ethnically mixed school and contained a large proportion of under-achieving students.

Classroom B, a third-fourth combination, was located in a school in an affluent, upper-middle and upper class neighborhood. The students were from predominantly profession-oriented families. Though some students exhibited learning difficulties, the majority were at or above grade level in achievement.

In the subsequent descriptions of pupil classroom behavior, Classroom A pupils are described as attending to the teacher only if located near the teacher; and Classroom B pupils as attending in the majority

wherever they were located. Pupils in Classroom A called out ("shouted" is the word used) their answers to teacher questions without permission and answered when they were inclined to do so. Pupils in Classroom B raised their hands for permission and waited for permission to speak.

In their research on effective teaching, Brophy and Evertson (Note 3) found that less effective teachers of low SES pupils had more disruptive and deviant behavior in their classrooms and used more criticism and controlling statements; while more effective teachers had less deviance and disruption in their classrooms and used less criticism and controlling statements.

The Brophy and Evertson research provides a good illustration of the complexities involved in interpreting correlational studies. Remembering that more and less effective teachers were defined solely by pupil achievement gains, we can make two different interpretations of the obtained data. On the one hand, we can infer that more effective teachers maintain more orderly classrooms, with pupils who meet the four criteria discussed above. Or we can infer that less orderly pupils, not meeting those same criteria, result in less effective teaching behaviors, i.e. lower academic achievement.

As another link between pupil SES and teachers' expectations or predictions of academic success or failure, Mazer (1971) found that teachers given photographs of male and female, black and white pupils, with sets of SES descriptions alternated among them were inclined to use pupil SES rather than sex or race as the basis for predicted academic performance.

The research on teacher effectiveness does not, as a rule, look at anything but pupils' academic achievement in relation to identified teacher behaviors or practices. The realm of pupil experience and the impact of certain behaviors on pupil self-concept is, at this time, largely unexamined. There is every reason to believe that, as the evidence is accumulated, and as repeated questions are raised with regard to the differential effects of certain teacher behaviors on different types of students, and possible conflicts between cognitive and affective outcomes, a sound basis of research information will be developed in that area, along with a more adequate concept of teacher effectiveness. After making a comprehensive review of the studies in teacher effectiveness to which we have already referred, Medley (1978) raised these questions:

One largely unanswered question about the nature of teacher effectiveness is whether a teacher who is effective in producing one kind of gain with one kind of pupil may also be expected to be equally effective in producing other kinds of gains with other kinds of pupils. Is teacher effectiveness general or specific to the kind of pupil taught and the kind of outcome measured? This point is of particular interest as it applies to cognitive versus affective outcomes. Do teachers who produce relatively rapid gains in reading and arithmetic do so at the expense of pupils' attitudes toward school or their self-esteem? (p. 18)

This is a timely question since of the 14 studies included in his review, five used only low SES pupil populations, four were studies done with only high SES subjects, and the remaining five used a combination of high and low SES pupils for comparison.

What the educator considers an educational program covering the school curriculum, athletics, aesthetics, and social events--the pupil experiences. What researchers consider to be variables of the "process"--teachers' praising, questioning, sequencing, grouping, and classroom management behaviors--the pupil experiences. Those experiences can be pleasurable or painful, satisfying or frustrating, exciting or boring, threatening or affirming, and--educating.

We would suggest, then that the desire to eradicate SES as a predictor of pupil academic achievement must be preceded by a willingness to examine through research the nature of SES as a predictor of the pupil's schooling experience, and by a willingness to explore ways to modify those experiences which take pupil SES into account. By following such a course, we will be able to go within and beyond pupil SES as a predictor.

A Conceptual Model for Examining Pupil Experience

The process of education is intended to change pupils from a pre-condition of "not knowing" to a post-condition of "knowing," in accordance with a prescribed curriculum. The pupil is always the target of change in every educational process, and the schooling experience is the treatment designed to effect the prescribed change.

It is, therefore, the pupil's characteristics as a learner that must be addressed by the treatment, or educational process. (This paradigm can be diagramed as a very simple change model as noted in Table 1.

Insert Table 1 here

If by applying this construct, we can predict from pupil characteristics to positive and negative pupil outcomes, then we have identified the positive or negative effect of the treatment. If the cognitive ability of a pupil predicts successful or unsuccessful outcomes, then we can suspect the treatment and/or the unsuccessful outcomes as being matched or unmatched to pupil characteristics. If pupil SES is used as a global descriptor of pupil characteristics to predict successful or unsuccessful pupil outcome, we cannot ascertain whether the outcome relates to pupil learning characteristics or to experiential and environmental characteristics or both. We can only conclude from such predictions that either the process or the prescribed outcomes or both were matched or unmatched with pupil characteristics.

Appendix A presents a model for conceptualizing teacher effectiveness drawn from Table 1 and based on input variables (pupil characteristics), change process variables (teacher characteristics, subject matter) and outcome variables (cognitive and affective pupil outcome measures). We have attempted to provide a reasonably complete list of the input, change process, and outcome correlates of effective teaching and, where possible or appropriate, we have attempted to indicate possible ranges of values or conditions which each variable might assume.

Table 1
The Change Process

Input	Pupil Schooling Experience	Outcome
Pupil Characteristics	Treatment: Teacher Behaviors, Practices, etc.; Subject content	Positive/Negative Impact on Pupil Performance/ Self-Concept

Most importantly, we consider the fate of each variable as it has been treated in the research literature.

Evidence of the efficacy of public education as a process for pupil change has long been at hand. The majority of pupils entering this process have changed in accordance with the standards of prescribed outcomes. Two types of pupils have failed to change: (1) those who were unable to attain the objectives at the prescribed pace due to their cognitive abilities; and (2) those who were cognitively able but unmatched to the process and outcomes by virtue of their experiential and environmental characteristics.

If we are to improve the process to address the needs of all pupils, it is important that the process be examined as the experience of pupils, which is a constant parallel of cognition and affect.

Since the process of education has both cognitive and affective components, it becomes important to consider how these are related in the schooling experience. Weinstein and Fantini (1970) have argued that the concept of relevance performs this function, relevance being defined as a general or overall congruence between the purpose of the classroom experience and the experiences of the pupils in that classroom. "It is our general hypothesis that relevance is that which connects the affective...and the cognitive...aspects of learning" (p. 23). The aim is for balance or harmony between cognition and affect, rather than overreliance on either.

The Teacher as an Instrument of Change

The teacher in the classroom is charged with being the main instrument of change, supported by an institutional system that provides and

maintains the teaching-learning environment. The major function of the institution is to vest the teacher with a visible authority over the pupils in the teacher's charge. Most pupils know that behind the teachers in the classroom there is a power that extends even to their parents. As expressed by McDermott (1977), "Teaching is invariably a form of coercion (p.198)."

It is apparent in the interpretations of research results offered by research investigators that effective teachers are those who judiciously apply their power of authority in maintaining a classroom free from disruption, off-task behavior, and other indications of pupils' non-conformance with the teacher's definition of the pupil role. The inferences made in the research always suggest that the teacher has the "power" to control pupil behavior and to affect pupil self-concept. The image is one of the teacher as the hub of the classroom wheel with a "power" relationship extending from the teacher to all the pupils who form the rim of the wheel.

While it is true that teachers are vested with the "authority" to control pupil behavior, that authority does not empower the teacher to do anything other than to demand, to invoke sanctions, and to eject the pupil from the classroom (or the school itself) as a last resort. Pupil conformity, pupil obedience, and pupil acceptance of the pupil role are behavioral manifestations of the pupils' internalized value systems, as any teacher confronted with pupils who have no such values can testify.

In a very real sense, it is the pupil who invests the teacher with the power to control, and the power to affect both pupil learning processes and self-concept development. When the pupil extends an empowering relationship to the teacher, i.e., "attending to the teacher," a reciprocal relationship, not a unidirectional relationship, is established between them. In this reciprocal relationship, both pupils and teachers exert what Hunt (Note 4) defines as "pull" or cues of influence which are "read" and selectively adapted to in responses, described as "reading" and "flexing."

The reciprocity based upon the extension of a value-based relationship in the teaching-learning situation where pupils attend to teachers and teachers attend to pupils is essentially the same kind of relationship in which teachers are credited with the power to affect pupil self-concept (Kash and Borich, 1978). This relationship, called the Behavioral Dialogue, describes the process in which the pupil vests the teacher with significance, that is unqualified acceptance as a source of "self" reflection, or as a salient other, a person accepted with qualifications and conditionally valued for a specific function. The classroom environment, including peers, and the physical surroundings are also given a salient value. In all instances, the value and the power to influence are conferred by the pupil, as illustrated in Figure 1.

Insert Figure 1 here

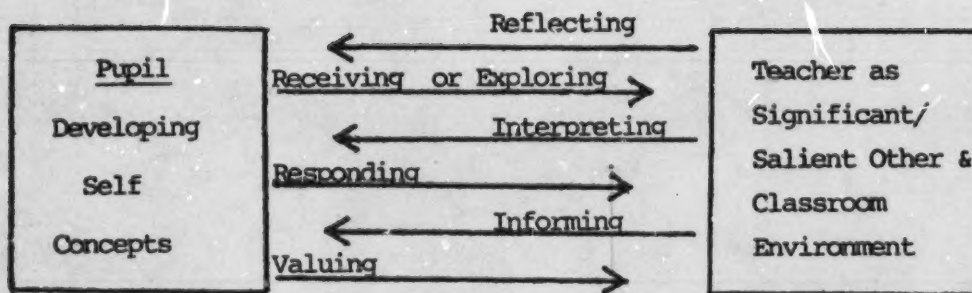


Fig. 1. Basic Elements of the Behavioral Dialogue
Applied to the Schooling Experience

Teachers' functions as significant/salient others in the behavioral dialogue of the classroom are those of reflecting pupils, interpreting their roles, and devising their experiences and providing information. Each one of these functions is a theoretical source of data for the assessment and evaluation of the nature of the pupils' experiences in the school context, and in association with the pupils' value systems, indicates the positive or negative affect of the events the pupil is experiencing.

The way the teacher manages the classroom, interprets and defines the pupil role in the learning process, applies classroom discipline, selects pupils for recitation, presents information, and provides feedback to the pupil all have within them an element of reflection, interpretation, and information that can, if the pupil so elects, affect the pupil's concept of self, positively or negatively.

When researchers present teacher behaviors as more or less effective in correlation with pupil academic achievement, the direction of the pupil behavior indicates a valuing for, or at least an association with, the teacher behavior. It is possible, then, to draw inferences for pupil valuing with regard to "self" from the behavior of the teacher on one side of the dialogue, and the behavior of pupils on the other side, with careful attention to any pupil trait variables such as high or low SES, pupil anxiety, pupil dependence, and pupil autonomy.

We shall also take the position that there are other aspects of the self besides self-esteem, or perception of self-as-pupil, affected by the experiences of the classroom. Since there are, as yet, no universally accepted definitions of any "self" referencing constructs,

and since the constructs we have previously devised are more useful, at least to us, in this context, we will also be utilizing those constructs in our discussions of the effect of teacher behaviors on pupil self-concept. This construct, which we call The General Self-Concept, is described in Kash and Borich (1978).

In examining the pupils' experiences, Weinstein and Fantini (1970) identified three common concerns of pupils: first, a concern with self-image and with the development of a sense of "Who I am" in relation to self and others, or self-identity; second, a concern with a feeling of disconnectedness, a problem of relevance, "Where do I fit in this world"; and third, a concern about control of their lives, whether they see themselves as having significant impact on their world or whether they see themselves as helpless in the face of authority or other unknown forces.

Our national posture has, in past decades, tended to produce educational and other social policies implicitly or explicitly aimed at minimizing or reducing cultural and ethnic differences in attitudes, customs, languages, and behaviors—a posture accurately caught by the metaphor of "the melting pot." Our present stance seems more aptly described by a "mosaic" metaphor, where cultural and ethnic differences are seen as having positive value, both for those holding them and for the society as a whole. Educational policy, then, tends to allow for more diversity in these areas, accepting heterogeneity where once homogeneity was required.

When low SES predicts academic experience and achievement, we face a situation in which many such pupils are virtually guaranteed negative experiences and achievements. As Bloom (1973) has pointed out, "Successful experiences in school are no guarantee of a generally positive self-concept, but they increase the probabilities that such will be the case. In contrast, unsuccessful experiences in school guarantee that the individual will develop a negative academic self-concept and increase the probabilities that he will have a generally negative self-concept" (p. 142).

Cautions to be Observed Concerning the Research Literature

Research on effective teaching is intended to isolate and identify specific or general teacher behaviors that bring about positive pupil changes. If we had such information we could train new teachers to behave in effective ways, provide post-educational experiences for practicing teachers to improve their performances, and easily monitor the overall effectiveness of the educational process.

Thousands of person-hours (and computer-hours), millions of dollars, and an unmeasurable amount of thought and energy have been spent trying to bring about such a state of affairs. Especially in recent years, literally hundreds of research studies have been reported in the literature and scores more are either under way, in grant proposals, or germinating in fertile minds.

Considering the mass of data available to us in this review, it seems appropriate to indicate some of the problems confronting both the reviewer and the educator charged with drawing viable conclusions

from this voluminous research literature.

The evaluation of any scientific study is a function of many factors, but certainly two of the most important are captured in the following questions. (1) Has this research been replicated? (2) Can the results of this study be generalized, i.e., can we apply the obtained results under different circumstances?

The first question, replicability, is basic to the advancement of scientific knowledge, whether the science be subatomic physics, biochemistry, botany, or education. When a study is done a second (or third, or nth) time, under the same conditions, and the same (or similar) results are obtained, our confidence in the data is enormously enhanced. And since science is a public phenomenon engaged in by fallible human beings, our confidence is even further increased if replications are performed by independent investigators--again, the more the better.

The operative phrase here is "under the same conditions." As we shall see, the teacher effectiveness literature is characterized by an almost overwhelming diversity of teacher and pupil samples, methodologies, and observational techniques, statistical procedures, and outcome measurement instruments. A related problem, as we shall also see, is that information necessary for replication is often ambiguous or lacking entirely. Therefore, it is difficult to find many studies in this area which meet even reasonably loose criteria of replicability.

The second question, generalizability, is equally crucial to the interpretation of research results and their translation into policy. When we are dealing with extremely simple phenomena the generalization issue may remain relatively insignificant. When, however, we are dealing with an area as rich in complexity as the teaching-learning process, we must proceed with extreme caution. When many variables are involved, the scientific method attempts to hold all but one variable constant and see what happens to that one variable under some treatment condition. If unknown variables, or variables known to interact with our chosen variable, are also present, obviously our conclusions must be tentative and limited.

The situation in regard to teacher effectiveness research is that there are a lot of variables, varying across a lot of studies; and this fact, coupled with the above discussion of replicability, suggests that we should exercise extreme care in deciding when and how far we should generalize from a particular study.

There are other more specific caveats of which we should be aware. One relates to the fact that researchers often assume that teacher and pupil behaviors will be related in a straightforward linear manner—that is, increases in one will always be associated with increases in the other. In fact, such relationships are often curvilinear. For example, an increase in teacher praise may be associated with an increase in some pupil outcome—up to a point. Beyond that point, further praise may become so expected and irrelevant as to cause no further increase in the pupil outcome or even to reverse the effect. Several varieties of curvilinear relationships appear in the literature, and their inter-

pretations are obviously more complicated than those for more simple linear relationships.

Another problem relates to the fact that research results are, of necessity, based on teachers who are under observation, and who are very much aware of that observation and its potential effects upon their teaching careers. As Barker and Wright (1955) have shown, most people tend to forget the fact of observation over time; however, most of the present research utilized observational techniques where such a time factor could not be expected to operate. Moreover, Samph (Note 5) found clear differences in behavior between teachers who knew they were being observed and those who were not sure whether they were being observed or not. Specifically, the former teachers were more attentive to their pupils than were the latter teachers and tended to use less criticism. Such differences would surely be reflected in many of the research results reported for teacher effectiveness. In addition, the effects of observers on pupil behaviors have not been examined, but can be assumed to have consequences for teacher-pupil interactions, either positive, negative, or both. Without a clearer understanding, then, of the ways in which intrusive observation techniques affect teaching behaviors, we must be careful in generalizing results of observed classroom teachers to those teachers when not under observation or to other teachers.

Although there are a few experimental studies to be considered in this review, the bulk of the research is correlational in nature. In other words, teacher behaviors are observed, pupil behaviors are observed, and pupil outcomes are measured. All of this takes place in the classroom, which is characterized above all by teacher-pupil interactions.

In this context, we need to remember that teacher-pupil interactions are interactions—that is, teachers undoubtedly affect their pupils, but pupils also affect their teachers. Correlational techniques reflect the tendency for two (or more) events to co-vary—they do not provide a basis for inferring either the presence of a causal relationship or a directionality of presumed causation.

Researchers and reviewers are aware of the proper interpretation of correlation coefficients, and are careful to warn their readers about leaping to unwarranted cause-and-effect conclusions based on such data. These warnings are commonplace in introductory remarks. When the time comes to report and interpret the data, however, this warning is often forgotten because of the culturally ingrained assumption that teachers are the prime causal agents in the classroom, and the understandable desire on the part of the researcher or reviewer to provide practical and meaningful answers to the questions posed by the research.

The importance of this problem lies in the fact, alluded to above, that pupils do influence teachers. When, for example, Medley (1977) concludes that "The effective teacher maintains an environment that is supportive, ...and free from disruptive behavior," it is easy to attribute causality to the teacher who manages to achieve and maintain such conditions. However, this teacher may have been presented with a classroom full of mature, intelligent, responsible, motivated pupils with an understanding of and appreciation for the values of education. Were this same teacher to be confronted with another classroom, filled with immature, less intelligent, irresponsible, unmotivated pupils whose values derive from an entirely different set of experiential and

environmental circumstances, we might predict the presence of considerably more disorderly behavior. And, in the second case, we might be tempted to conclude that pupils have caused changes, perhaps substantial changes, in that teacher's behavior. Such a conclusion is also erroneous—again, we can only conclude that the behaviors in question are associated—not that one causes the other.

Part II. Representative Results of Teacher Effectiveness Research

The teacher effectiveness research to be considered represents the state of the art at the present time. Conceptually, this research is based on a model that consists of observing and recording identified teacher and pupil behaviors occurring in a classroom. The achievement levels of those pupils are assessed before and after the observations, and correlations are obtained. These are the bare bones of the process-product model of teacher effectiveness research.

Methodologically, we will deal with very few experimental studies. Our data base includes ethnographic or ecological analyses of the classroom, program evaluation techniques, and correlational research. All of these methodologies result in correlational data. A reading of previous reviews suggests that we are now in a position to draw conclusions based on an emerging consensus of replicated results from a variety of relatively comprehensive sources. We will report findings which can then be described as representative of those sources.

Rather than burden the body of this discussion with extensive references, Appendix B presents a table relating specific findings (identified by number) to those references from which they were drawn (identified by authors). The references will be found in the Bibliography. In constructing this table it was necessary in many instances to forego the creativity of variable-namers and to collapse into one category variables which by definition seemed similar.

Discussions following the Summaries of Findings are based primarily upon those major studies that represent among them the sum of identified teacher behaviors appearing to be both relevant and informative to our purposes. Other studies offering insights pertinent to the discussions are also tabled, but all findings of those studies may not appear. References to theories and interpretations will appear in the body of the text and in the Bibliography, but not in Appendix B.

Time is Relevant

Summary of findings:

- . Time spent actively engaged in learning is positively correlated with pupil achievement. (1)
- . Amount of allocated time for academic subjects is positively correlated with pupil achievement. (2)
- . Length of school day or year is positively correlated with pupil achievement if it is a factor in allocating time per subject. (3)

The most intensely researched questions in terms of breadth and scope, with the most substantiated results in terms of confirmation and mutuality across circumstances, are those addressing the relationship of "time" to academic achievement. The three basic questions addressed were:

1. What is the relationship between the length of the school day and academic achievement levels?

2. What is the relationship between time allocated to specific subject content and achievement levels in that subject?
3. What is the relationship between actively engaged-pupil-time within allocated-to-subject time and achievement levels in that subject?

We have selected three research studies that address at least two of these questions in identifiably different geographical circumstances.

The first study is one undertaken by the International Association for the Evaluation of Educational Achievement, which has been in progress for over a decade. This study included twenty-one countries, 17 of which are classified as Developed and the remaining four as Developing countries. It evaluated the achievement of student populations ranging from age ten to the final year of secondary education, in six subject areas (Farrell, 1977). The results of this study, specific to the research questions, are: (1) While there is considerable variance in the length of school days and the number of days per year across countries, these variables did not predict academic achievement; however, (2) the amount of time allocated to a specific subject did predict levels of academic achievement. The more time pupils spent on a subject, the more they achieved.

All of these factors, length of school day, allocated time, pupil-engaged time, and measurable differences in program characteristics between schools come together in the next study.

The Follow Through Classroom Observation Evaluation (Stallings and Kaskowitz, Note 6) was designed to investigate the differential effects of in-school programs that were based on different theories of

development and education. These programs were implemented as extensions of pre-school programs for the purpose of consolidating and maintaining the academic gains made by pupils enrolled in Head Start and similar projects. Seven programs representing among them the theories of Dewey, Piaget, the English Infant School theory, and reinforcement theory were selected for evaluation, along with non-Follow Through comparison populations. The 35 selected project sites covered all geographic areas of the United States, rural and urban locations, and several racial and ethnic minorities at first and third grade levels. The study was focused on reading and mathematics instruction and achievement.

Relevant results indicated that the length of the school day and the average time spent by the pupil engaged in a reading or mathematics activity were related at both first and third grade levels to higher reading and mathematics scores. Since the length of the school day varied by as much as two hours among the schools in this study, the length of the school day affected the amount of time that could be allocated to specific subjects.

The ability level of each of the pupils in this study was assessed at entry into kindergarten or first grade by the Wide Range Achievement Test (WRAT). The investigators concluded that classroom instructional processes predicted as much or more of the outcome score variances than did entering school test scores of children. Based upon these findings, they concluded that what occurs within a classroom does contribute to achievement in basic skills, good attendance, and desired child behaviors.

The Beginning Teacher Evaluation Study, Phase II (Fisher, Berliner, Filby, Marliave, Cahen, Dishaw, and Moore, Note 7) identified the following correlates of pupil reading and mathematics achievement gains:

1. The amount of time that teachers allocate to instruction in a particular subject is positively associated with pupil learning in that subject; and
2. The proportion of time that students are engaged in studying is positively associated with student learning.

Data on allocated time and pupil engaged time were collected over a one-year period in 25 second and 21 fifth grade classes.

Once again the wide variation in the amount of time allocated to subject content at both grade levels and the positive relationship between time allocated to subject content and pupil achievement were confirmed. The amount of allocated time sets a limit on the time spent with a particular subject content, and in that sense, limits the amount of time a pupil could be actively engaged in learning. In the fifth grade reading sample of this study the range of average allotted time varied from approximately 60 to 140 minutes per day.

In examining the relationship of allocated time to engaged time, an equally large variance in the proportion of engaged time appeared from class to class and pupil to pupil. Some classes had an average engagement rate of 50 percent while others reached an average approaching 90 percent.

The length of the school day does not predict pupil achievement in specific content areas because it does not reflect the time allocated to

a specific subject. However, it does create a press on the amount of time that can be allocated to subject content within a school day. The amount of allocated time per subject reflects the priorities of those who make the allocations. The amount of pupil engaged time reflects both the effectiveness of the teaching occurring in the classroom and the values (motivations), as well as the aptitudes and abilities of the pupils.

Time is an ever-constant factor of systematized learning processes. It is used to classify pupils as Fast, Average, or Slow learners defined by a ratio of learning content over time. On the average, nine months of a year allocated to specific curriculum content constitutes a grade level.

Pupils who, because of their rate of learning, do not cover the assigned curriculum objectives in the allocated amount of time may benefit from an increased amount of time assigned to the same curriculum objectives. Pupils who can cover the assigned curriculum in the allocated amount of time may benefit from an increase in allotted time and an increase in curriculum objectives. These are, to date, the essential elements of both individualized instruction by self-paced curriculum materials and ability grouping by teachers.

The issue of time--in school, in the classroom, allocated, on-task--seems too obvious to warrant much more attention. Yet it is in these areas that the most solid research results exist and that the most specific policy implications lie. Since time is finite, the relative allocation of school time must inevitably involve trade-offs between

and among different activities. The research conclusions which strongly suggest that more time spent--by pupils--in reading and mathematics classes in the lower elementary grades lead to increased achievement levels in those subjects, have the following implications.

First, we must assume that such an increase in reading and mathematics time will lead to less time spent on other subject matter and/or on social, aesthetic, and recreational activities of a more broadly educative nature, further overbalancing the classroom toward cognitive rather than affective experiences.

Second, we must also raise the question of whether or not, within time spans specifically allocated to these subjects, there are still more or less effective teacher behaviors. That is, nothing in this section suggests that we should not continue the search for effective teachers.

Third, we need to remember that these results strongly emphasize the central role of the pupil in investing the school and the teacher with the power to teach. The bottom line is pupil time-on-task. With all other conditons optimized, it is the pupils who will or will not be engaged in the learning tasks prepared for them. There have been a number of different procedures used in the research for measuring such pupil behavior, all of which are inadequate in at least one sense. One pupil skill which will forever elude any but the most sensitive and sophisticated observer, is the ability to appear to be on-task, intently poring over textbook or work sheet, while actually dreaming of things far removed from the instructional content.

Pupils' Attending Behaviors and Teacher Effectiveness

Summary of findings:

- . Pupils' attending and cooperating behaviors differentiate more and less effective teachers across pupil SES and grade levels. (4)

"Teachers are assigned to meet with groups of students for designated periods of time and to conduct activities that involve all students and have some educative justification. At a proximate level, the teacher's task engendered by this arrangement is to secure the cooperation of students in classroom activities. Complications in gaining cooperation arise from the fact that students vary in their abilities to accomplish academic tasks and in their inclinations to participate in classroom activities." (Doyle, Note 8, p.4)

By attending to the teacher, pupils indicate that they may be vesting the teacher with the "power" to teach, and by accepting the pupil role as defined by the teacher, they indicate at least a value for adult, or teacher, authority. Less effective teachers of low SES early elementary pupils have more deviant, disruptive pupil behavior in their classrooms. In high SES classrooms, pupil behaviors labeled as withdrawn and passive were negatively correlated with pupil academic achievement. These behavior patterns could be interpreted as cues that, at best, these pupils did not fully understand the definition of the pupil role, and at worst, that the role was simply not accepted or

valued.

As demonstrated by observed pupil behavior, more effective teachers of low SES pupils in the lower elementary grades have pupils who could be described as having: (1) a value for teacher authority; (2) a value for the teacher-defined role, and the perception of self as doer, learner, and knower reflected in that role, and/or (3) a value for teacher approval.

In terms of observed pupil behaviors, both more and less effective teachers of middle and high SES pupil populations have less deviant and disruptive pupil behaviors in their classrooms. From this evidence we can draw the inference that when classrooms are characterized by pupil attending and cooperating behaviors, and significant increases in learning are not taking place, other factors related to teacher practices or pupil characteristics must be more salient in these classrooms.

Direct and Indirect Teaching Methods

Summary of findings:

- . Direct teaching methods are positively correlated with pupil achievement of lower-order cognitive objectives. (5)
- . Direct teaching, with slower pacing of learning objectives, is positively correlated with achievement of low SES pupils. (5)
- . Indirect teaching is negatively correlated with achievement at lower elementary grade levels and across SES levels. (7)

Two methods of teaching that incorporate characteristics of teacher-centeredness and pupil-centeredness, with regard to the style in which lesson content is communicated, are described respectively as Direct teaching and Indirect-teaching.

Direct teaching employs a stimulus/response model with immediate evaluation of response, elements that are incorporated in conditioning, programmed learning, and contingency models. It is considered to be a highly appropriate and effective method when the nature of the cognitive objective is convergent (focused on the one and only "right" answer as in learning number facts or spelling), or one of "decoding" or "recalling" (associating sounds and letter symbols, using phonemes and word recognition in reading).

The appropriateness of this method appears to be substantiated by research results indicating that pupil gains in academic achievement, at the basic skills acquisition level, are positively correlated with teachers' direct teaching styles. Low SES pupils have been shown to make gains in achievement when direct teaching was used and when subject content was presented in smaller amounts at a slower pace. Tallmadge (Note 9) has also identified direct teaching as an effective method in remedial education, where basic skills acquisition is again the primary learning objective.

In applying the Direct teaching mode to the presentation of subject content, the pupil role could be interpreted equally narrowly and be confined to drill, drill, and more drill, in the task activities following presentation. However, a creative use of materials as instructional

aids and more individual interaction with the teacher (or other adults in the classroom) and discussion about the subject content can broaden the pupil's participating role and increase the opportunities for a positive perception of self as doer, learner, and knower that would be valued by pupils in the formation of a positive concept of self-as-pupil.

Indirect teaching, a style considered to be more appropriate for divergent learning tasks (developing and applying mathematical concepts to problem solving, analyzing context for word meaning, finding relationships to form generalizations and discover principles) and requiring higher-order cognitive functioning, appears to have a limited role at the early elementary level. In the context of higher-order questioning, a negative association of higher-order cognitive functions with the achievement of pupils in elementary grades has been found in the research.

The fact that lower elementary subject content is characterized by lower cognitive learning objectives does not mean that concept development is not occurring at these grade levels or even below. There is every reason to infer from the research and from knowledge of curriculum content that there is a role for indirect teaching practices that relates to learning at these grade levels, but that the effects cannot be measured by standardized achievement tests.

Tests administered to both Follow Through Project pupils and control pupils produced significant information regarding the effects of teaching practices on pupils' self-perceptions. The cognitive level and subject content for all the pupil populations was essentially the

same. However, in those programs where pupil roles were broadened to allow some pupil initiative, and access to a wider variety of activities and exploratory materials, pupils "learned to see the relationship between parts and wholes" (Stallings, 1976, p.47). Pupils in these programs also showed more independent and more cooperative behavior.

Teacher Questioning Practices: Pupil Questioning Response Behaviors

Summary of findings:

- . Higher-order questioning is negatively correlated with pupil achievement across SES, elementary grade levels and subject content. (8)
- . Lower-order questioning is positively correlated with pupil achievement across SES, elementary grade levels and subject content. (9)
- . More effective teachers of high SES pupils permit pupils to take the initiative in asking for help. (10)
- . More effective teachers of low SES pupils persist in questioning pupils and help them to respond. (11)
- . More effective teachers of both high and low SES pupils gauge questions at an appropriate level of difficulty. (12)

Questioning is one of the classroom teacher's most potent teaching skills. Questioning is the means of obtaining feedback from the pupils that tells the teacher whether presentations are understood or misunderstood, whether procedures are clear or ambiguous, and whether the

level of learning is acceptable or unacceptable. They inform the teacher as to which pupils are having trouble and which pupils can be expected to go ahead with task activities. Many of the verbal interactions in the classroom fall into the categories of teacher and pupil questioning behaviors.

The widely held belief that higher-order questioning will contribute to pupil gains in learning was not substantiated by the research. Higher-order questions were negatively correlated with pupil academic gains across all SES groups, grade levels, and subject content.

Lower-order questions gauged at an appropriate level of difficulty for pupil ability and subject content were positively correlated with pupil gain across all SES groups, grade levels, and academic subjects. An appropriate level of difficulty was defined as challenging to pupils and not simply drawing upon well-known information.

The practice of calling on volunteers is also correlated with pupil achievement across pupil populations at these grade levels.

More effective teachers of low SES pupils also persisted with their questioning when pupils could not answer, and supplied process cues to help pupils respond. More effective teachers of low SES pupils also tended to ask questions in rotation, providing opportunities for all pupils to recite.

More effective teachers of high SES pupils tended to ask more product questions requiring short answers than process questions requiring long explanations. Rather than persisting when pupils failed to answer, teachers of high SES pupils tended to move along to

another pupil for correct answers or supplied the correct answer themselves.

Student-initiated questioning correlated with pupil achievement gains across all SES and grade levels, and academic subjects. High SES pupils tended to seek out teachers for questioning, low SES pupils did not. High SES pupil response behaviors of "calling out" were positively correlated with pupil achievement in a mathematics context; this same behavior was negatively correlated with pupil gain in a reading context for the same SES group.

These data on teacher questioning processes support the general contention that early elementary pupils show gains when questions are kept straightforward and relatively simple. This is in accord with the fact that the material to be learned is straightforward and convergent. The consistent finding that higher-order questions correlate negatively with achievement may be interpreted as an argument against the use of such questions. However, this finding may reflect the fact that the use of higher conceptual level thinking is not easily measured. It may also reflect the fact that pupils have not had the opportunity to develop such cognitive processes in the school experience. Future research may resolve this question.

Teacher Praise

Summary of findings:

- . Teacher praise is positively correlated with the academic achievement of low SES pupils. (13)
- . Teacher praise shows either no relationship or negative correlations with the academic achievement of high SES pupils. (14)

It has been presumed in the research hypotheses of investigators that pupils will respond to teacher praise with increased performance. Teacher praise, acceptance, and approval have been singled out for considerable study. The results of these studies indicate that pupils respond differentially to teacher praise.

One of the difficulties confronted in examining the research on teacher praise and pupil achievement has been the variety of operating definitions for "praise." Some measures have included all possible forms under a global term "praise," and others have differentiated between the use of praise during instruction and the use of praise as a means of behavior control. As a specific teacher behavior, praise is correlated with pupil achievement. However, when pupil characteristics such as SES are used as discriminators, teacher praise is shown to be more highly correlated with the achievement of low SES pupils, and shows either no relationship or a slightly negative relationship with achievement of high SES pupils.

These results suggest the nature of pupils' experiences with teacher praise, and their individual values for it. It seems only reasonable to suspect that pupils who receive a great deal of praise for their performances and products will "get used to it," and that pupils who are not performing and producing at an approved rate will be more impressed by a positive evaluation of their efforts. That may be a possible explanation for the patterns of results found in the research.

But there are additional findings that suggest a closer relationship between individual pupil values and the way they respond to praise. Among low SES pupils there was a positive relationship between teachers' praise of pupils' responses to opinion questions, but a negative relationship with teacher praise for response to factual questions. Among low SES pupils, approval-seeking behaviors were also found to be negatively correlated with learning gains. A relationship suggesting the possibility that pupils who are dependent upon the teacher's praise and approval are more likely to be motivated by that praise and approval was reported by Hartup (1958). He found a positive relationship between teacher praise and achievement of girls, and of "dependent" boys.

It appears that teachers' praise is more likely to motivate and encourage low SES pupils who value that positive reflection of their performances. It does not seem to affect the already positive perception of self-as-pupil held by high SES pupils.

Evaluative Feedback

Summary of findings:

- . Teachers' use of evaluative feedback that directly relates to pupils' performances and products is positively related to increased academic performance by both high and low ability pupils. (15)

The point at which both praise and criticism come together for pupils is the evaluative feedback offered by teachers. High achievers respond more positively to evaluative feedback that includes criticism of their work than they do to teachers' praise and approval. Pickup and Anthony (1968) reported that pupils with low expectations for the success of their work responded with more effort and higher achievement when they were given the benefit of the doubt (received credit for partially correct answers) that resulted in higher grades than were expected.

The kind of self-fulfilling prophecy that is often related to teacher expectations for pupils is also related to pupils' expectations of their own successes and failures. Pupils, too, are in a position to influence the outcomes of their performances, but those who believe they will fail are more likely to fail in the future.

In a very simple and practical experiment, Page (1958) investigated the effects of written teacher feedback practices on school tests and found that low achieving pupils responded with better test scores on subsequent tests when teachers took the time to write evaluative and complimentary comments on their test papers. The effects of this practice were compared with giving only a number grade or letter mark, and writing one-word comments like "excellent," "good," or "poor" on the papers. Teachers in this study expected their high achieving pupils to respond most favorably to the written comments, but it was the "F" students who showed the greatest gains on subsequent testing.

According to an experimental study of pupils' expectations and their response to negative and positive feedback (Crandall, Good and Crandall, 1964), pupils who expect to succeed, but experience failure, are more affected by failure than are those pupils who expect to fail and do fail. Likewise, pupils who expect to fail and experience success are not as willing to attribute success to their own ability and do not raise their expectations appreciably. For them, success is attributable to something outside of themselves, but failure is their own responsibility. As far as expectations are concerned, the Crandall study shows that success cannot raise expectations as effectively as failure can lower them.

This study also reported that the effects of positive and negative feedback were more lasting, and varied in their effect on subsequent pupil performances. Pupils who received positive feedback while performing a task and who were then sent to perform the task without any feedback from an attending adult, were inclined to interpret the lack of feedback as criticism. Pupils who first received criticism for their performances and then experienced silence while performing with an adult, were inclined to interpret silence as approval.

This same phenomenon was found in another experimental study (Meichenbaum, Bowers and Ross, 1969) in which pupils who had experienced a reduction in the amount of teacher criticism (and a reduction in the amount of teacher praise as well) improved their academic scores. Pupils who received more teacher praise but no reduction in the amount of criticism, improved their scores, but not as significantly as those

who experienced a reduction in criticism.

Pupils who are achieving seem to value teacher's feedback when it helps them solve problems they have identified. They also appear to value criticism as a motivator for improving their work. Low achievers appear to value teacher's praise and feedback as reflections of their progress, and also as a positive reflection of their own personal contributions. Pupils who are compelled to spend a good deal of time doing what they are told to do, in the way they are told to do it, should value the opportunity to make their own personal contributions. When teachers over-use praise, it can become a meaningless event that can't be taken personally and can't be used as a real measure of a pupil's performance and products. It becomes, instead, a characteristic of the teacher. It is highly likely that continued criticism has the same effect and when it simply describes the miserable state a pupil is in, without any information as to how to get out of it, the pupil's most likely recourse will be either not to take it personally or not to hear it.

Teacher Controlling Behaviors

Summary of findings:

- . Teacher belittling of pupils is negatively correlated with pupil achievement across SES groups, grade levels, and subject content. (16)
- . Teachers' treatment of the class as one unit in pressuring for peer control is negatively related to pupil achievement across SES groups, grade levels, and subject content. (17)

- . Establishing reasonable rules for class deportment and following through with the application of consequences is positively correlated with pupil achievement at the elementary level. (18)

Teachers are in classrooms because they chose to be; pupils are there because they have to be, and that one small fact can loom very large. Those pupils who arrive in the classroom ready to accept the pupil role will pose few problems. Those who arrive unprepared or unwilling to accept that pupil role will provide all the problems a teacher or a school can handle. It is no surprise that maintaining discipline is a major concern of classroom teachers and school principals. But how the pupil role is defined and how teachers maintain discipline is the core of many of the problems of classroom discipline.

The majority of the pupils in public school classrooms are not deviant and disruptive, but they may still be subject to teachers' controlling behaviors that cause them embarrassment, humiliation, and loss of self-confidence. In a survey of college students asked to describe their most negative and growth-inhibiting experience, interactions with teachers were named as the primary sources of such experiences (humiliation, embarrassment, unfairness, destruction of self-confidence), even outdistancing parents and peers (Branan, 1972).

In the research on teacher effectiveness, belittling, defined as berating a child before the class, is negatively correlated with pupil

achievement across grade levels and subject content. Another controlling behavior found to be negatively correlated with pupil achievement is defined as oneness, the practice of treating the whole group or class as "one," in an effort to exert peer pressure to maintain control.

The classroom controlling behavior found to be positively correlated with pupil achievement is consistency of message for control, defined as giving a direction or threat and following through with it.

The two negatively correlated behaviors are those that require an "adversary" concept of the teacher-pupil relationship. Teachers who resort to belittling, shaming, disgracing, and humiliating pupils intentionally cannot hope to establish the relationship of trust necessary for a learning environment. And teachers who institute a "hostage" system of control, making others pay for behavior they can't control, cannot expect children to develop responsibility for their own behavior.

Teachers who set behavioral limits and establish classroom rules and who apply them fairly, rather than indiscriminately, promote self-sufficiency and pupil self-control.

Task Structuring for Cognitive Development

Summary of findings:

- . Structuring tasks for less direct cognitive control but with behavioral control is positively correlated with pupil achievement of higher-order cognitive objectives. (19)

While direct instruction has been correlated with achievement at those grade levels where pupils are engaged in lower-order cognitive tasks, there is evidence that teachers should not consider more to be better in using direct instruction. There is an indication that too much direct teaching and too closely structured activities had limiting effects on learning and on the development of higher-order cognitive skills.

Research indicates that direct teaching facilitates learning of lower-order cognitive objectives, but that less directness is indicated for higher-order cognitive objectives. In a comparative analysis of program effects of The Follow Through Project, it was found that one model of the program, highly structured in design and based on programmed learning and conditioning principles, and which had previously ranked high on measures of pupil academic gain, reversed its status when measures for high-level cognitive objectives and concept development were introduced the following year.

Where creativity and higher-order concept development are the objectives of the learning task, pupils should have more freedom, under supervision. Some of this freedom can be obtained by structuring tasks so that pupils can apply understood rules and directions. This not only offers an opportunity for the pupil to relate the impact of his or her skills to the learning task, but also increases the opportunities to develop constructive, cooperative behaviors (Torrance, 1971).

Teacher Talk and Pupil Talk

Summary of findings:

- . Teacher clarity is positively correlated with pupil academic achievement. (20)
- . Increased levels of symbol usage by pupils and teachers (pupil questioning, discussion, reading time in other subjects, time allocated to reading and mathematics) is positively correlated with pupil achievement in reading and mathematics. (21)

Words and other symbolic representations of reality are the working tools of education, and not much of what we call formal education can take place without them. Progressing from the acquisition of basic skills to the application of those skills represents a move into a world where ideas, not just facts or concrete reality, exist (Bruner, 1971).

Earlier research dwelt at some length on the ratio of teacher talk to pupil talk. The results of this research were not very rewarding, but the patterns of classroom interaction and communication were highly informative. Very little of the research was done with the learning situation reported and, as a result, it was difficult to tell whether a high amount of teacher talk was recorded due to presentation of material or a controlling tendency. Pupil talk, unless it was related to subject content, revealed more about off-task behavior than the relationship between pupil talk and pupil achievement.

In the Follow Through studies which incorporated several different programs for early elementary education, verbal activities, including activities related to other subjects, were associated with pupil gain in reading. Other research at the fourth and fifth grade levels found that discussion about subject content was also correlated with achievement for middle and high SES pupils.

In addition to the importance of feedback communications, teacher clarity in presenting information was found to be correlated with the academic achievement of pupils above the third grade level. Moving to higher-order cognitive tasks with expanding applications of the basic skills to higher-order processes and concepts may bring the clarity of presentations into focus as a differentiating characteristic of effective teachers that is not as discernible at the lower elementary levels.

At every level, and increasingly so, the process of education is a verbal experience. When pupils lack, and cannot acquire, this key to the system, it is highly unlikely that they will have a successful schooling experience.

Classroom Management Practices

Summary of findings:

- . Small group instruction is positively correlated with pupil achievement in the basic skills at the first and second grade levels. (22)
- . Whole class instruction is positively correlated with

pupil achievement in mathematics and reading at the higher levels of elementary education. (23)

- . Pupil-to-pupil tutoring and unsupervised individual or small group work are negatively correlated with pupil achievement at the early levels of elementary education. (24)

What to do, how to do it, and when to do it, pretty well describe the themes to be scripted by teachers, whether they are dealing with classroom management or the structuring of learning tasks. Research describing such themes is confined to a very few of the elements that go into classroom management. One of the elements that does appear with regularity in the recent literature is the way pupils are grouped for instruction.

Whole Class Instruction. Organization of pupils for lesson presentation shows a move from smaller groups at primary levels to whole class instruction at the higher levels of elementary education. At the third grade level, large group instruction was correlated with pupil achievement in both reading and mathematics. In the fourth grade, whole group instruction was also correlated with greater pupil gain in mathematics.

Studies examining differences in whole group and small group presentations also investigated feedback situations, use of additional material and workbooks, and audiovisuals in relation to effective whole class or large group instruction, but no consistent relationships were

found.

Small Group and Individual Instruction. Small group instruction was correlated with pupil gains at the first grade level. Included in these conditions were more highly structured and more systematic instructional patterns, more teacher-pupil interaction, and immediate feedback and reinforcement of pupil responses. These instructional patterns applied to both reading and mathematics achievement at this grade level.

Individual attention, supervised seat work and small group work were also positively correlated with higher achievement when the pupils showed persistence in the assignments. Pupil-to-pupil tutoring and unsupervised small groups or individual seat work were negatively correlated with achievement.

It appears that at the early levels of instruction, pupils fare better with closer teacher supervision and help. Pupils at the upper levels appear to have acquired at least a sufficient amount of classroom behaviors to be allowed more autonomy in the learning process.

The pupil's one-to-one perception of the relationship with his or her teacher would presumably be established in either a small group or whole class learning situation. The opportunities for more frequent reflections and interpretations of pupil behavior from the teacher can logically be presumed to be effective in developing a concept of self-as-pupil as well as a means of reinforcing cognitive achievement. By the third grade, pupils appear to have acquired a concept of the behaviors that are expected in the classroom and this allows for the

more effective use of teacher time in presenting lessons to larger groups or to the whole class.

Relating Teacher Practices to Pupil Self-Concept

Summary of findings:

- . Pupil roles that include opportunities for pupil initiative and exploration, with access to a wider variety of activities and material, are positively correlated with measures of pupil independence, and spatial concept development. (25)
- . Teachers' attitudes and beliefs expressed in classroom behaviors can positively or negatively affect pupil performance and opportunity to learn. (26)

A successful school experience seems to have within it an image of the "self" as having some control over what happens, a control that stems from understanding and knowing what to do, how to do it, and when to do it—all derived from the teacher's function of informing, reflecting, and interpreting in the classroom environment. And in the course of acquiring a successful experience, pupils are dependent upon the teachers' evaluation and feedback of their progress and performances.

An unsuccessful school experience seems to be characterized by an image of the "self" as having little control over the events in the classroom, a lack of understanding as to what to do, how to do it, and

when to do it. This results in less initiative, less goal directed behavior, less participation in the process, and poorer products. It also appears to result in more deviant and disruptive pupil behavior.

The problems involved in studying the relationship of self-concept development to teacher behaviors are far greater than those confronting research on cognitive pupil gains and they are much farther from any resolution. There is no foundation of solid research with regard to teacher behaviors and their impact on pupils that could be applied to, or be used to inform any decision. But we can bring together the teacher behaviors identified here as having an association with pupil achievement and a defined construct of self-concept that will allow us to consider the possible relationships.

Tests to both Follow Through Project pupils and control pupils produced significant information regarding the effects of teaching practices on pupils' self-perceptions. The cognitive level and subject content for all the pupil populations were essentially the same. However, in those programs where pupil roles were broadened to allow some pupil initiative, and access to wider variety of activities and exploratory materials, pupils "learned to see the relationship between parts and wholes (Stallings & Kaskowitz, Note 6, p. 47)." Pupils in these programs also showed more independent and more cooperative behavior.

Administration of a measure of pupil's acceptance of responsibility for their successes and failures (Intellectual Achievement Responsibility

Scale [Crandall, Katkovsky and Crandall, 1965]) provided interesting results of program effects.

Third-grade pupils in programs that spent more time with subject content and in practice, with high rates of praise from their teachers (the conditions that produced the highest rates of performance and growth) tended "to accept responsibility for their failures but not for their success (p. 45)." Pupils in less structured and more flexible learning situations took responsibility for their successes but not their failures. Pupils in only one program that was based on the principles of the English Infant School accepted responsibility for both their successes and failures.

Interpreted as pupil experiences that provide reflections of the self through teacher behaviors, pupils who accepted responsibility for their failures but not their successes may have perceived themselves only as "approved" or "disapproved," and their responses as acceptable or unacceptable to the significant adult. Academic performance, then, is perceived as a means of gaining approval, with the power of approval and the standards for approval vested in the teacher, a source outside of the "self." Failure, however, reflects the pupil's inability to gain approval, a condition directly attributable to the acts of the "self."

Pupils who accepted responsibility for their successes and not their failures may have acquired a more positive perception of self as having a positive impact on their environment through their behaviors, but may not yet have acquired a set of standards for academic behaviors. Therefore, failure in academic performance is defined by standards not

yet aquired by the pupil.

Pupils who have a perception of self as having responsibility for both success and failure can be seen as having an understanding of the behaviors that gain approval and success, and a knowledge of the standards to be applied. This would be defined as a realistic concept of self-as-pupil.

The clearest and most constant image a pupil receives in the classroom is the image of "self" that is formed by the teacher's reflections and interpretations of the pupil's performances and products. The real experiences of pupils, successful and unsuccessful, are to be found in the nature of these reflections and interpretations, and in the pupil's response to them. The schooling experience is idiosyncratic, with no two pupils in the same room with the same teacher having exactly the same experience. Regardless of how many other students in the school or how many pupils in the class, the schooling experience comes down to "my school," "my class," "my teacher," and ultimately, "my education."

Two sources that have an impact on the nature of a pupil's schooling experience are teacher bias and teacher expectation. There is evidence in the research literature that pupils' experiences can differ because of their cognitive abilities, their sex, socio-economic status, ethnicity, and race.

The generally held belief that girls are more suited to the controlled environment of the classroom has been supported by research indicating that girls receive more approval, but boys receive more

attention, both positive and negative. Boys' performances are more highly praised when they are correct, and boys' behaviors are more harshly criticized (Lahaderne, Note 10; Meyer and Thompson, 1956; McNeil, 1964; Good and Brophy, 1972).

That teachers' beliefs can be translated into an effect on pupil performance and achievement was demonstrated by Palardy (1969). This study confirmed that teachers who believed boys learned to read more slowly than girls produced reading scores to confirm their beliefs; teachers who did not believe there was a difference in the learning rates of boys and girls were equally able to substantiate their beliefs through pupil scores.

The belief that teachers' expectations affect pupil IQ has not been substantiated by research. However, there is evidence to support the hypothesis that teacher expectations affect their behaviors, and subsequently, the performance and achievement of their pupils. Teachers with low expectations for their pupils are in a position to reduce the subject content and limit the activities, thus influencing the performance of their pupils.

Teacher biases expressed as attitudes and behaviors in the classroom become reflections and interpretations of pupils that affect the formation of the sense of bodily self and sense of self-identity when related to physical traits. They are also sources for the reflection and interpretation of the performing self (the sense of self-extension) and are, therefore, positive and negative sources for the sense of self-esteem.

The belief that all pupils will be negatively affected by academic failure and will have low self-esteem as a result is widely held by educators, whose values for education are reflected in that belief. There are, however, pupils who do not have a value for education and are, therefore, not affected by academic failure. Pupils can have values for the self related to physical traits and abilities, or for reference groups outside of the school situation that are more important to them than a positive perception of self-as-pupil. The problems these pupils present for teachers are ones of influencing their value systems and creating a value for academic achievement.

Part III. Concluding Comments

For every teacher behavior identified by research on teacher effectiveness as having a positive or negative relationship to pupil gains, any classroom teacher could respond with a "Yes, but..." followed by an enumeration of possible conditions or circumstances that would alter the direction, or constrain the use of that particular behavior. Teachers know that their behaviors have differential effects on their pupils. What "works" as a motivator for one pupil can be utterly ineffective with another. An explanation that produces new understanding and comprehension for one group will leave another group still baffled, and a few pupils bored.

Teachers are already aware that pupils' time-on-task is a critical dimension related to the achievement levels within the classroom. The orientation of the teacher toward this dimension, however, is different from that of the researcher. The teacher looks at the time needs of the majority of the class and gauges presentations and tasks to accommodate their learning rate and capacity. Those pupils whose rate of learning is faster than that of the majority will spend less time on planned tasks and require additional activities. Those whose learning rate is lower than the class majority will require more individual attention.

Researchers, on the other hand, are looking for a significant relationship between an operationally defined dimension and pupil criterion outcomes, using the combined scores of all the pupils to

create a class mean. In a manner of speaking, this process distributes achievement across the class, absorbing both extremes, the very high and very low scoring pupils. In a like manner, the frequency of an observed behavior, such as time-on-task, becomes a composite picture of a class or classes, and does not represent individual pupil behaviors.

The composite pictures assembled from the data are statistical representations of classrooms, pupil behaviors, and teacher behaviors. The results of these studies do not tell us what should or could be happening in classrooms. When more effective teachers of low SES pupils are described as having less deviant, disruptive pupil behaviors in their classrooms, and less effective teachers are described as having more of such behaviors, we cannot point to a causal direction. We do not know what behaviors or whose behaviors are caused by whom or what. We do know that pupils who were less deviant and disruptive appeared to make more academic gains than pupils who were more deviant and disruptive, thus giving their teachers the classifications of more and less effective, respectively. In other words, the closer low SES pupil behaviors resemble those of middle and upper SES pupils, the closer the teaching behaviors of "more effective" teachers of low SES pupils resemble those of teachers of high SES pupils.

None of these descriptive process-product studies actually tell us what teachers should do to increase the academic achievements of low SES pupils if they are not attending and on task. What would make the acquisition of basic skills more relevant, more valued, and more

sought after by these low achieving pupils is the question still unanswered.

Let us consider again the international IEA study. In developed countries it was found that "home background" variables accounted for most of the variance in pupil achievement. In developing countries, on the other hand, "in school" variables accounted for more of the variance. These findings reflect, among other things, the homogeneity of such factors as level of teacher training, presence of textbooks, and so on, in the developed countries compared to the developing countries. Along the school continuum there is simply more variation present in developing countries.

When we turn to our own country, certainly developed rather than developing, we find again that relative development level is predictive of pupil achievement. Although the Coleman report (1966) finds that "in school" variables are less important than "home background" variables, it also makes clear that "school factors make more difference in achievement for minority group members (low SES) than for whites (middle SES)," and that "it is those children who come least prepared to school...for whom the characteristics of a school make the most difference (p. 297)."

For the majority of our pupils, then, the differences between the schools attended were not statistically significant along the dimensions measured by the Coleman survey. But this does not mean that schools (or teachers) make no difference in pupil achievement. It only means

that whatever makes this difference will be found within the schooling experience of pupils.

What is experientially significant, however, is that SES does make a difference. We can predict that, for high SES pupils, "in school" variables are more potent. That is, because of the match between their attitudes, values, and behaviors and those expected in our classrooms, we predict that these pupils will have differential educational experiences, both positive and negative. For low SES pupils, however, because of the mismatch between their attitudes, values and behaviors with those expected in our classrooms, we can predict highly similar--and negative--classroom experiences.

The experiences of pupils may, as suggested by the research, include a great deal of direct teaching in the early years. The question that must be raised with regard to this experience, and in the light of current research, is whether this process constitutes educating in the broad sense of the word, or training in the narrow sense of the word.

Careful attention should be given to the consequent achievement of pupils who acquire basic skills successfully through direct teaching practices. If their success in giving right answers does not increase their ability to make decisions, direct their own behavior, set their own goals, and assume responsibility for their successes and failures, we will not have moved toward eliminating SES as a predictor of academic achievement.

The ordinary citizen must be equipped, now more than ever, to make informed decisions that deal with our national, and indeed, global welfare. Daily decisions of the marketplace are not just matters of addition and subtraction, but of judgments based on knowledge of risk and personal values.

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¹A Pupil-Centered Model for Research in
the Natural Setting of the Classroom

In Part I and in Appendix A to this paper we have presented a pupil-centered model for research on teaching effectiveness. This model utilizes the natural setting of the classroom and incorporates current educational practices. It is a simple change model based upon the premise that the educational process is intended as a treatment for changing students from a state of not knowing to knowing. Students are, therefore, the Input into the change system, the educational experience is the Treatment, and the changes in student performance behavior is the Outcome.

The unstated, but operating, hypothesis of every classroom is that the applied treatment, that is, the conditions and experiences offered students, will address the state of the target population and produce desired changes in their performing behaviors. Measures of student outcomes indicate the match, or mismatch, between student entry characteristics, the change treatment applied, and the system-prescribed outcome criteria.

The purpose of this model is to examine hypothesized relationships between student characteristics, educational treatments, and student outcomes. When it is applied to descriptive studies, this model can be used to identify differences and similarities in sample student populations, applied treatments, and student outcomes. Applied to comparative studies, this model can be used as a guide for documenting differential responses of identified sample populations to defined and monitored educational treatments. Knowledge gained from both types of studies can serve as the basis for designing experimental treatments for defined populations.

The practical purpose of this model is to identify the ways in which some students can be said to be like some others by defined characteristics and responses. By application of meta-analysis to accumulations of studies utilizing this model we may someday be able to identify the ways in which all students can be said to be like all others in their characteristics and responses. However, our present purpose is to provide a knowledge base for the treatment of student differences to achieve similarity in successful outcomes of the educational process.

Appendix A. A Model for Conceptualizing Teacher Effectiveness Research

The following table presents a conceptual model for identifying input variables (pupil characteristics), change process variables (teacher characteristics, subject matter), and outcome variables (pupil cognitive and affective outcome measures) known or assumed to be correlated with effective teaching. We have provided both the three types of variables and possible values or conditions which they might assume. The following discussion describes how these variables have (or have not) been dealt with in the literature.

(Insert Table A here)

Pupil correlates

1. Age/grade level. Every study, of necessity, indicates the grade level(s) with which it deals. The vast majority deal with the early elementary grades, a few extend upward into the upper elementary levels, and virtually none address either the junior or senior high school grades. Given the data on pupil cognitive, emotional, social and moral development across these time spans; given the differences both in variety of materials studied and in teaching practices deemed appropriate as grade level increases; and, finally, given the increasing importance of the affective component of education (see below), very real questions must be raised regarding the extent to which results obtained at the

Table A
Input Variables, Change Process Variables and Outcome Variables Known
or Assumed to be Correlated with Effective Teaching

Input	Change Process	Outcome
Pupil Characteristics:	Teacher Characteristics	Cognitive Skills
age: K through 12	age: (20-29,...60-69)	lower-order
sex: male	sex: male	higher-order
female	female	Cognitive Time:
ethnicity: black	ethnicity: black	short-term
brown	brown	long-term
red	red	Affective: school
white	white	self
other	other	
SES: high	SES: high	
medium	medium	
low	low	
achievement: high	achievement: high	
medium	medium	
low	low	
personality (multi-dimensional)	personality: (multi-dimensional)	
	experience: yes (con.)*	
	yes (incon.)	
	no	
	familiarity: not A or B**	
	A, not B	
	B, not A	
	A and B	
	subject matter: reading	
	mathematics	
	social studies	
	science	
	literature	
	(others)	

*The three levels of this variable correspond to (a) experienced teachers who achieve consistently high or low learning gains with their pupils (b) experienced teachers who are inconsistent in achieving learning gains with their pupils and (c) inexperienced teachers

**A = pupils, B =curriculum.

early elementary levels will generalize to the upper grades. Valuable as such information undoubtedly is for the samples studied, the extrapolation of such data to higher grades may be irrelevant or even counterproductive.

2. Gender. There is both experimental and correlational evidence indicating that teachers react differently to boys and girls, that girls and boys behave differently in some ways, and that there are sex differences in relation to both cognitive and affective pupil outcomes. Virtually all the research reviewed in this paper, however, has collapsed scores across classrooms, grade levels, and/or schools, so that few statements can be made regarding possible teacher effectiveness differences as a function of pupil gender.

3. Ethnicity. Recent decades have witnessed a rising awareness of potential ethnic differences in the perception of the school environment and in the achievement levels obtained by different minorities. Black, Chicano, and Amerindian pupils manifest differences among themselves, and all three groups together differ from the white majority in identifiable ways. When experimental studies compare these groups along some dimension relevant to education, differences are found more often than not. While some studies do report results, both cognitive and affective, in ethnic terms, the majority do not, again collapsing results across groups.

Indeed, the specific ethnic composition of the classrooms being studied is often unclear. While many potentially relevant interactions undoubtedly exist within this area, interactions between pupil and

teacher ethnicities, and between ethnicity and gender should serve to remind us of the complexity of the differences we are ignoring in not considering ethnicity.

4. Socioeconomic status (SES). This is a composite variable usually assumed to include such background factors as family income, parents' educational levels, child-rearing practices, and language experiences. Our society, nominally democratic, recognizes the existence of at least upper, middle, and lower classes; sociologists extend the categorizations to lower-middle, upper-upper, etc. Educational researchers have found SES to be one of the most important predictors of cognitive and affective pupil change, and SES designations accompany almost all studies (See Part I). However, if such categorized results are to be generalizable (and such studies replicable) we need some consistent basis for classifying schools and pupils. Is the determination based on objective data, proportion of pupils using the free lunch program, the use of upper and lower extremes, or median splits based on principals' ratings? All of these techniques and more appear in the literature, and often no way is even provided for determining how the decision was made.

5. Previous achievement level. The fact that there are bright pupils from poor backgrounds and dull pupils from affluent backgrounds indicates that SES and achievement are not perfectly correlated. Each pupil, at least from grade one on, carries with him/her a record of previous successes or failures whether based on previous grades, teacher ratings, and/or standardized IQ and achievement tests. Such

records at least partially determine his/her placement into Fast/Slow groups and may determine how the teacher perceives his/her potential (teacher expectancy effects).

The argument for including achievement correlates can be illustrated by considering three teachers of equal ability confronted with, respectively, an "all dumb" class, a "mixed" class, and an "all smart" class. Other things being equal, these teachers could end up being categorized as low-, medium-, and high-effective teachers solely as a function of pupils' previous achievement levels. Yet this correlate, again, is lost in most of the present research because of the tendency to deal with class or school averages.

6. Personality. We will be doing classroom teachers no great service by informing them that pupils have personalities and that different pupils have different personalities. They differ along measurable dimensions, in terms of traits including (but certainly not limited to) anxiety, dependency, autonomy, aggression, conformity, and locus of control. All of these dimensions have been studied experimentally, and to deny their presence and importance in the classroom is to emulate a quaint habit of the ostrich. A particular teacher behavior, e.g., criticism, will have much different effects on: an extremely dependent pupil; a highly autonomous one; and one who does not value teacher comments at all. Although we may eagerly anticipate the day when effective teaching will take into account pupil personality, that day has not yet arrived. These variables

play literally no part in the effectiveness results so far reported. Indeed, again, we are given no information on personality variables.

Teacher correlates

1. Teacher characteristics. Teachers vary, as do pupils, on the dimensions of age, gender, ethnicity, SES, previous achievement levels, and personality. It would be more than a little naive to expect the same or even similar behaviors from a 21-year-old black male of high intelligence from a ghetto background and from a 65-year-old white female of medium intelligence from an affluent suburb. And it would be the height of folly to assume that such differences do not interact with similar pupil differences.

Unfortunately, with a few experimental exceptions, all the richness and diversity of teacher (and pupil) personality variables does not appear as a significant factor in the research.

It is almost as if there is one monolithic teacher--ageless, sexless, of no discernible race, of unknown background and unknowable personality--teaching one similarly neutered pupil. Broad generalizations across such diversity may confuse more than clarify questions of teacher effectiveness. Not only are teacher characteristics absent as variables, the relevant information is usually completely absent, leaving the researcher interested in replication with nowhere to turn.

2. Teacher Experience. The operational definition of "teacher" in effectiveness research has ranged from students enrolled in introductory education classes through pre-service teacher trainees and

student teachers to "line" teachers with widely varied levels of experience. Rarely if at all taken into account is the related issue of a teacher's experience with a particular subject matter or grade level. Indeed, again, such descriptive data are rarely reported.

More importantly, it is known that in-service teachers are measurably different both in terms of stability and competency, at least in some respects. Using the criterion of pupil cognitive gains on standardized achievement tests, Brophy and his associates have been able to identify those teachers who produce consistently high (or consistently low) pupil gains over a period of years; and those teachers who show inconsistent patterns of gains over a period of years. We can have little confidence in conclusions regarding teacher effectiveness when we do not know whether they are stable or consistent, or when we do not even know how the word "teacher" has been defined.

3. Teacher familiarity. The above discussion relates to how long a teacher has been teaching. Whether teaching is regarded as an art or as a science, most would agree that both artist and scientist need at least some period of time in order to familiarize themselves with the parameters of their art or science, and to develop and stabilize their performances. A related issue concerns those studies, some experimental and some correlational, in which teachers are placed in situations where they are unfamiliar with either the materials or the students to be taught; or where they are unfamiliar with both. While it is true that much valuable information may be acquired in this manner, especially relating to pre-service teacher training, we must again question the propriety of grouping together studies of these

kinds and studies where the teacher is familiar with both materials and pupils. The latter situation more closely approximates the real-life classroom and generalizations across these dimensions should be made with extreme care, if at all. And there is no reason to expect successful replication of a study done under one set of familiarity conditions if the replication is based on a different set of such conditions.

4. Subject matter. It is becoming clear in the research that effective teaching is a matter of subtly arranging many specific behaviors and applying them differently at different times and with different pupils. This finding is relevant to the question of the subject being taught. Surely we might expect different behaviors to be differentially effective in communicating mathematics, poetry and good citizenship skills to elementary pupils. And we might also expect increased differences in higher grades, where teachers deal with core subjects still, but also with homemaking, woodworking, art, music, driver education, science, foreign languages, physical education, and so forth.

Available research relies almost exclusively on studies of reading and mathematics skills at lower grade levels. Again without questioning the value of results for those subjects at those grade levels, their generalizability is an empirical question that only future research can answer.

Outcome correlates

Although we will consider cognitive and affective outcomes separately, it is important to remember that their separation is heuristic only. Any cognitive outcome has affective components and any affective measure will reflect cognitive aspects as well. Similarly, any teacher behavior will affect not one or the other but both.

1. Cognitive outcomes. Our society tends to view education as a primarily intellectual process, and our primary educational goal is to produce positive cognitive gains in our pupils. We should not be surprised to find that cognitive measures are the primary criteria for assessing effective teaching. Virtually all such assessment is based on standardized achievement tests. These instruments are convenient—easy to obtain, administer, score, and interpret—and are usually psychometrically sound. But two questions arise.

In the first place, standardized tests typically are based on the recall of specific information, and sample primarily lower-order decoding skills. Surely at some point we must begin as well to assess the higher-order, encoding, integrative, interpretive, problem-solving skills of our pupils. To date, this has been done very infrequently.

Secondly, such tests are usually given immediately or as soon as possible after learning experiences. We have, in other words, no longitudinal data based on re-testing after specified time intervals. We can thus begin to answer questions about the immediate effects of effective teaching, but cannot answer the critic who suggests that those measured gains may be transitory and ephemeral. Obviously our overall goal relates to such long-term changes and future research

must give this problem high priority.

2. Affective outcomes. The measurement of affective (emotional, self-concept) pupil outcomes, although their importance has been recognized by most workers and stressed by some, has received much less attention in the literature. Researchers are cognitively aware of the affective side of education. They are sophisticated enough to warn us not to expect simple one-to-one correspondences between affective and cognitive measures—a teacher behavior leading to positive cognitive change may have a neutral or even negative effect on a pupil's self-concept. And they willingly acknowledge that the relative importance of the affective realm becomes increasingly important in the upper elementary grades, junior and senior high schools. Nevertheless, affective measures figure much less strongly in our data base than do cognitive measures. This imbalance is unfortunate. Since school is a required and shared experience of all our young people, we would not be off the mark to suspect that that experience is a major factor—positive or negative—in the development of their affective lives.

Another concern related to generalizability is the variety of affective instruments used. When researchers talk about affective outcomes they may be referring to pupils' attitudes toward a particular subject, toward their classroom as a whole, toward the school in general, or to their self-concepts, either as students or overall. Just as the different definitions of "teacher" plagued us earlier, so the ambiguously referenced term "affective outcome" limits our ability to generalize across studies.

Let us close this discussion with a somewhat broader question. If the effective teacher were to produce in her/his pupils only short-term cognitive gains, whether lower- or higher-order skills, and only ambiguous and short-term gains in self-concept, how would we evaluate the educational process in general? Surely we want to produce citizens capable of pursuing an occupation or profession, capable of interacting positively with other people, capable of further self-directed learning and growth. Surely we want to produce adults who can adapt rapidly and intelligently to a world of ever-increasing complexity and change. Surely we want and desperately need people who can do their part in the vital task of working out solutions to those problems—international and individual violence, poverty and starvation coexisting with over-indulging affluence, suicidal environmental degradation, rampant but unexamined technological expansion, social and personal alienation and anxiety—upon which our planetary survival depend.

If effective teachers, doing effective teaching, do not have some impact in these larger contexts, then our future research efforts may be determined, in a very real sense, by whether or not we have a future.

Appendix B

Sources	Findings																									
	Time is Relevant			Pupils' Attending Behaviors	Direct & Indirect Teaching			Teacher Questioning Practices					Teacher Praise		Evaluative Feedback	Teacher Controlling Behaviors			Task Structuring Cognitive Development	Teacher Talk & Pupil Talk		Classroom Management Practices			Teacher Practices & Pupil Self-Concept	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	
Brophy & Evertson (Notes 3 & 11)				•	•	•	•	•	•	•	•	•	•	•	•			•		•	•		•	•		
Fisher, <u>et al.</u> (Note 7)	•	•	•	•	•											•	•	•		•	•					
Good & Grouws (Note 12)					•			•	•	•		•		•	•					•			•			
Farrell (1977)	•	•	•																							
McDonald, <u>et al.</u> (Note 13)	•	•	•	•	•	•		•	•						•			•		•	•	•				
Stallings & Kaskowitz (Note 6)	•	•	•		•		•					•	•		•					•	•	•	•	•	•	
Soar (1968, 1972, Note 14)							•	•	•										•							
Coker, <u>et al.</u> (Note 15)	•			•	•					•		•		•	•	•										
Good & Brophy (1972)																										•